

## Supplementary Materials

Firstly, we examined the difference of pain ratings with same stimulus energy (14 levels from 1 – 4.25 J, in step of 0.25 J) between males and females, as shown in Fig. S1 (A). It can be seen from Table S1 that significant sex-dependent difference was observed at most of the stimulus levels (except levels 3, 12, and 13). Next, a similar analysis was conducted to compare RMS<sub>P</sub> values with same rating values (NRS from 0 – 8) between males and females, as shown in Fig. S1 (B). Statistical analysis in Table S2 illustrated significant sex-dependent difference at every rating value. Please note that all above differences were obtained using two sample t-test.

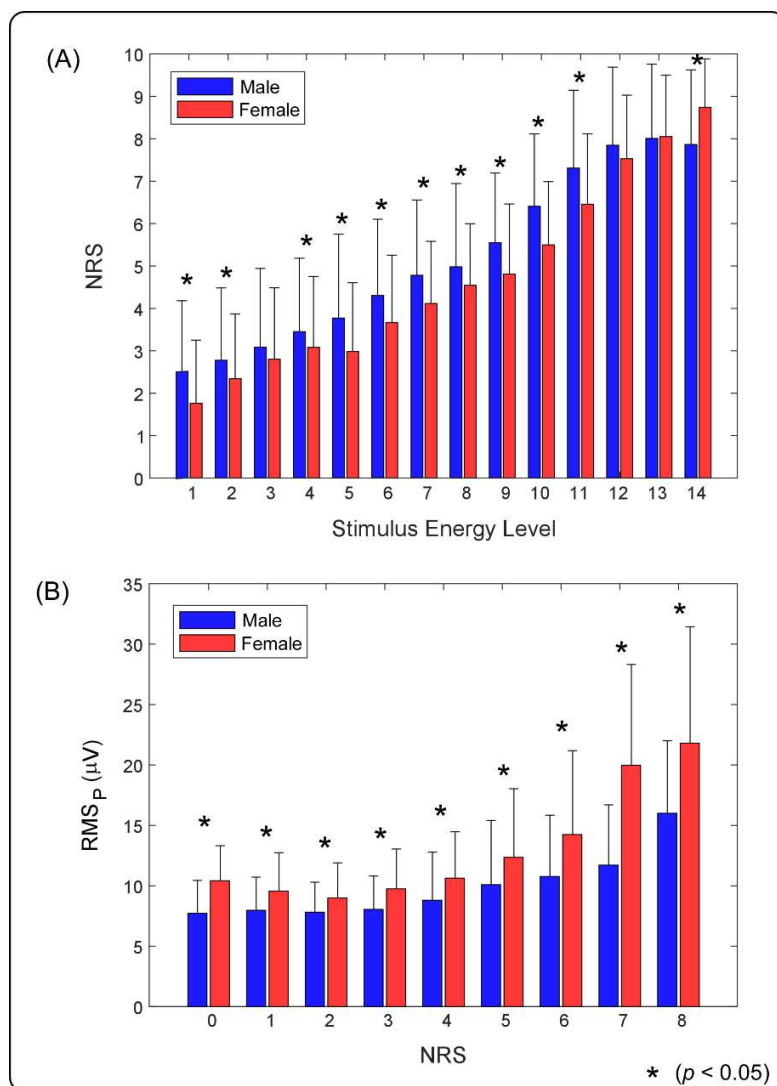


Figure S1. (A) Difference in pain ratings with same stimulus energy between males and females. (B) Difference in RMS<sub>P</sub> with same rating value between males and females.

Table S1. P-values of comparisons of pain ratings with same stimulus energy between males and females

Level of Stimulus Energy	1	2	3	4	5	6	7
P-value	2.3e-5	0.014	0.15	0.046	1.2e-4	6.4e-4	2.7e-4
Level of Stimulus Energy	8	9	10	11	12	13	14
P-value	0.026	8.2e-5	6.0e-7	2.9e-5	0.11	0.84	0.038

Table S2. P-values of comparisons of RMS<sub>P</sub> with same rating value between males and females

NRS	0	1	2	3	4	5	6	7	8
P-value	3.0e-6	5.7e-6	5.7e-5	6.8e-8	1.4e-9	2.5e-7	6.9e-8	<1e-9	<1e-9

The results showed significant sex-dependent difference in pain perception as well as in pain-evoked EEG responses, and the findings are consistent with the literatures (Eli et al., 2000; Fillingim, 2000; Riley et al., 1998; Wiesenfeld-Hallin, 2005).

## Reference

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- Wiesenfeld-Hallin, Z. (2005). Sex differences in pain perception. *Gender Medicine* 2, 137-145.